Appendix E
Acoustic Environment

Appendix E TRAFFIC NOISE EFFECT MODELLING

The traffic noise effect on residential properties (Receptors 19, 20, and 21) along the western portion of Skeena Drive before the Lelu Island access was assessed. The following sections provide details on the modelling method, parameter, and assumption used for this assessment.

E.1 METHOD

Sound propagation methods used in the traffic noise assessment are those prescribed by the International Organization for Standardization (ISO) Standard 9613 (ISO 1993; 1996), which is commonly applied and is accepted by the provincial regulatory bodies (i.e., Alberta Energy Regulator). Sound propagation from the Project was calculated using the Cadna/A latest version 4.3.143 (DataKustik 2013), a commercially available noise modelling software package incorporating ISO 9613 algorithms and the United States Federal Highway Administration Traffic Noise Model (FHWA TNM) for traffic noise assessment.

The model accounts for the following factors:

- Road type, road width, traffic volume, speed, and direction
- Geometric spreading
- Barrier effects
- Atmospheric absorption
- Source size, location and elevation (road elevations and surface slop are considered in the model)
- Mild downwind from the road to the dwellings(s) and/or temperature inversion condition
- Source directivity consideration.

The modelling parameters used in the assessment are summarized in Table E-1:

Table E-1 Model Parameters Summary

Item		
1	Temperature	10°C
2	Relative Humidity	70%
3	Wind Speed	Downwind condition, wind speed of 1 to 5 m/s
4	Noise Source Identification	Traffic noise associated with Skeena Drive near Lelu Island access (also refers to Section A.2)
6	Noise Propagation Model	Cadna/A (DataKustik 2013) FHWA TNM
7	Standard	ISO 9613-1, ISO 9613-2
8	Ground Conditions And Attenuation Factor	Ground absorption index (G) of 0.6 for coastal area and the island: Ground absorption index (G) of 0 for sea, water covered area, or roadway
9	Terrain Parameters (terrain resolution)	Ground terrain incorporated in model with 50 m resolution within the LAA
10	Reflection Parameters	1 order of reflection

E.2 ASSUMPTIONS

The following assumptions were used in the assessment:

- Daytime and nighttime traffic volume for the existing traffic along Skeena Drive is split 90% and 10%, respectively
- All current traffic is 100% vehicle (i.e., no heavy truck or bus)
- No rail traffic is included for existing condition
- Two shift changes will occur during the daytime period (7:00 AM to 10:00 PM)
- 107 shuttle bus round trip per day will be required between the camp and Lelu Island during the shift changes
- Shuttle buses will operate for two hours during each shift change, a total of 4 hours per daytime period
- Bus traffic speed of 50 km/hr.